

SN 10/016,848
Docket No. S-94,677
In Response to Office Action dated February 7, 2005

REMARKS

Claims 1-90 were filed with this case. Following a restriction requirement on December 8, 2004, claims 1-19 and 46-64 were elected for prosecution. The remaining claims are withdrawn from prosecution at this time. Claims 1-19 and 46-64 have been rejected in the office action dated February 7, 2005, on the following grounds:

1. Claims 1-3, 6, 7, 11, 14-19, 46-48, 51, 52, 56, and 59-64 under 35 U.S.C. §102 (b) as anticipated by U.S. Patent 5,715,044 to Hayes.
2. Claims 4, 5, 8-10, 12, 13, 49, 50, 53-55, 57 and 58 under 35 U.S.C. §103(a) as unpatentable over Hayes.

Applicant respectfully traverses the rejection of the claims, as now amended, under Hayes. Independent claims 1 and 46 have been amended to recite that a first beam portion is modulated with a first modulation and a second beam portion is modulated with a second modulation that is different than the first modulation (page 12, lines 1-3). The two modulated beam portions are then combined to form coherent beam containing difference information between the first modulated beam and the second modulated beam for propagating to a reflective target (page 12, lines 20-23). Thus, the first modulated beam is effectively heterodyned with the second modulated beam to produce a difference signal that is propagated to and from the target and remains constant irrespective of noise and other interference between the transmitter and the receiver (page 8, lines 4-9) to overcome the problem with a local oscillator and a returned beam that produces a speckle at a receiver (page 4, lines 20-24; page 5, lines 1-4).

By contrast, the appropriate portions Hayes teach only method and apparatus for transmitting and receiving two frequencies derived from a reference signal source modulated by two modulators driven at different frequencies. However, there is no teaching that a coherent hybrid beam is produced that contains a difference signal between the two transmitted beams for propagating. Indeed, Hayes teaches that a difference signal is produced by a local oscillator at the receiver (Col. 1, lines 39-45).

Applicant has amended independent claims 1 and 46 to more particularly recite the limitations that the first and second portions of an emission of electromagnetic

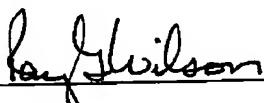
SN 10/016,848
Docket No. S-94,677
In Response to Office Action dated February 7, 2005

radiation are modulated by two different modulations and then combined to radiate a reflective target with a coherent hybrid beam. The transmitted and reflected beams contain a difference frequency that is not subject to intervening distortions and fluctuations since both the first and second modulated beams are subject to the same disturbances. Claims 17-19 and 62-64 have been cancelled as containing limitations not incorporated in independent claims 1 and 46, respectively.

Applicant respectfully submits that claims 1-16 and 49-61, as amended, are neither anticipated by Hayes nor obvious in view of Hayes. The Examiner is requested to allow claims 1-16 and 49-61 and to pass this case to issue.

Applicant's attorney would be pleased to discuss any of these issues by telephone if the Examiner believes such a discussion would assist in placing this case in condition for allowance.

Respectfully submitted,



Date: 3-31-2005

Reg. No. 28,351
Phone (505) 665-3112

Ray G. Wilson
Los Alamos National Laboratory
LC/IP, MS A187
Los Alamos, New Mexico 87545